DOCUMENT RESUME

ED 110 718 CE 004 515

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TITLE Function-Task-Competency Approach to Curriculum Development in Vocational Education in Agriculture: Research Report No. 1. Project Background, Plan, and Model Development.
INSTITUTION Wisconsin Univ., Madison. Coll. of Agricultural and Life Sciences.
SPONS AGENCY Wisconsin State Board of Vocational, Technical, and Adult Education, Madison.
PUB DATE Jul 74
NOTE 38p.; For related document, see CE 004 516

EDRS PRICE MF-$0.76 HC-$1.95 Plus Postage
DESCRIPTORS *Agricultural Education; Curriculum; *Curriculum Development; Curriculum Planning; Curriculum Research; Educational Methods; *Educational Strategies; *Models; Occupational Clusters; *Performance Based Education; Performance Criteria; Post Secondary Education; Secondary Education; Task Analysis; Vocational Agriculture; Vocational Education

ABSTRACT

The report explains the construction of the function-task-competency method of developing vocational education curricula in agriculture at the secondary and postsecondary levels. It discusses at some length five approaches to the development of vocational education curricula used in the past: the subject approach (which centers on subjects taught on a yearly basis); the integrated approach (which cuts across all subject areas on a yearly basis); the job analysis, occupational analysis, or competency approach (which focuses on task analysis); occupational areas or cluster approach (which defines competencies which are common to a number of related jobs and/or occupations); and functions of industry approach (which focuses on the different processes performed in business and industry to achieve success). The report develops a conceptual model for integrating these approaches into a comprehensive curriculum model consisting of a linear diagram which proceeds successively from occupational clusters through function, tasks, competencies, competency clusters, and a subjective value, philosophy, and student interest screen to curriculum development. After discussing the assumptions underlying the model, the report concludes with brief discussions of the five operational phases of the model construction, and the methodology and significance of the study. (JR)

ED110718

FUNCTION-TASK-COMPETENCY APPROACH TO CURRICULUM DEVELOPMENT IN VOCATIONAL EDUCATION IN AGRICULTURE

Research Report #1 Project Background, Plan, and Model Development

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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CE 004 515

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July, 1974

This research report was sponsored by the Wisconsin Board of Vocational, Technical and Adult Education

Preface

This report is the first of a series of research reports emanating from a longitudinal research project conducted by agricultural education staff in the Department of Continuing and Vocational Education, University of Wisconsin--Madison.

The major purpose of this document is to provide the background, the theoretical foundation, and the direction for subsequent research efforts within the framework of this project.

Report number two in this series will examine the professional competencies post-secondary and secondary school agricultural instructors need and possess.

Report number three will describe and analyze the philosophies of secondary school vocational agricultural instructors.

Subsequent reports will cover areas developed within the parameters of the research model.

Acknowledgement

The researcher expresses appreciation to Dr. Walter T. Bjoraker, co-director of this project, for assistance received on the preparation of this document. Also, grateful acknowledgement is expressed to the Wisconsin Board of Vocational, Technical and Adult Education for the financial assistance provided.

Background

Vocational education in agriculture has undergone considerable change in Wisconsin during the past decade. Examples of the changes that have occurred can be found in the clientele presently being served, the curriculum being offered, the number of schools with multiple man departments, and the demands of the labor market. These changes have caused concern among educators as to the pre-service and in-service needs of vocational agricultural instructors in order that they may effectively carry out their responsibilities under these changed conditions.

One of the major factors that has encouraged this change was the passage of the 1963 Vocational Education Act and the 1968 Amendment to this Act. Provisions of this Act have provided funds for construction of buildings, purchasing of equipment and facilities, as well as for developing and conducting new vocational educational programs in agriculture.

At the post-secondary level, another contributing factor was the law passed by the Wisconsin Legislature in July, 1965, which was responsible for the development of 16 Vocational, Technical and Adult Education Districts in Wisconsin. Prior to the passage of this Act, only some areas of the State had post-secondary vocational, technical and adult education offerings. With the passage of this Act, all geographic areas in the State had to be included in one of the previously mentioned Vocational, Technical and Adult Education Districts by July 1, 1970.

The post-secondary agricultural programs that have emerged in the past eight years have basically been of two types. First, diploma and associate degree programs which address themselves primarily to a specialized segment of agriculture; the duration of these full-time programs ranges from one to two years. Second, continuing education programs for young farmers which are oriented primarily to the needs of the farmers in the local community. Instruction in the young farmer programs is arranged in a five-year sequence; that is, if a farmer attended these classes for a consecutive period of five years, he will have completed the entire instructional program.

With the change in the types of and numbers of offerings at the post-secondary level came an accompanying increase in student enrollment. For example, the full-time diploma and associate degree program enrollment increased from 125 in 1965 to 1,930 in 1974. Likewise, the young farmer program had an enrollment increase of 796 to 3,891 during the same period of time.

As might be expected, as the enrollments increased, the number of instructors employed full time to administer and teach in these programs also increased.

In 1965 there were 2 full-time young farmer instructors and 18 instructors teaching in the diploma and associate degree programs. In 1972 these numbers had increased to 49 and 61 instructors, respectively.

Changes at the secondary school level were somewhat different during this period of time. Some of these changes which have an

affect on the instructional program in vocational agriculture are the following:

One, changes in clientele - Two major changes have taken place in this area. (1) The number of girls who have enrolled is steadily and rapidly increasing (i.e., there were 29 girls enrolled in vocational agriculture in 1965 and 1,715 in 1974; and (2) new programs have been developed in urban areas and programs which had traditionally enrolled mostly rural boys and now have enrolled a significant number of urban students. The number of urban students in agriculture has increased from 2,427 in 1965 to 8,127 in 1974.

Two, more variety in curricular offerings - Although the majority of the vocational agricultural departments still maintain an integrated production agricultural program, an increasingly larger number are either supplementing their programs with a nonproduction agricultural offering or have completely changed to a nonproduction program. Much of this change has resulted from the development of a pilot program committee which was appointed in 1965 to provide leadership and direction to the development of innovative programs in agriculture. To date, this committee has assisted in the development and/or modification of 32 vocational agricultural programs.

Three, an increase in multiple teacher departments - In 1965 Wisconsin had 27 two-man and 0 three-man departments. In 1974, these numbers had increased to 42 and 3, respectively.

Four, more FFA activities - The FFA during the past few years has changed and increased its degrees, awards, and activities so that

it can better serve the needs and interests of both the rural and urban students.

Five, less adult farmer instruction - Traditionally, secondary school vocational agricultural instructors had considered young and adult farmer instruction as part of their teaching responsibilities. However, this is no longer the situation. Only 62 of the 315 secondary schools offering vocational agriculture are involved in adult farmer instruction. Two factors have probably contributed most to this situation: (1) an increase in full-time post-secondary school agricultural instructors involved in young farmer programs; and (2) an ever-increasing work load for the secondary school vocational agricultural instructors.

Six, greater emphasis on planning and evaluation - In this era of accountability, educators at all levels are requested to be accountable. This, of course, requires knowledge and comprehension in all phases of planning and evaluation i.e., the development and use of performance and/or behavioral objectives.

Seven, changes in the labor market - The labor market in agriculture is in a continuous state of change. The number of individuals employed in production agriculture is becoming relatively smaller; whereas those employed in nonproduction agricultural occupations are becoming relatively larger in number. The employment increase in nonproduction agriculture reflects not only an increase in the types of occupations which already exist but, in many instances, a modification of these occupations and/or an addition of completely new occupations.

Statement of the Problem

The National Advisory Committee on Vocational Education in its report to the President in 1968 stated that, "Nothing will henceforth be more constant than change." As one can observe from the previous discussion, vocational education in agriculture is no exception; it is deeply involved in a number of changes which gives rise to a number of questions regarding vocational education in agriculture being offered at secondary and post-secondary schools in Wisconsin. The following are some of these questions. Are the secondary school vocational agricultural programs adequately preparing students for the world of work? Are the post-secondary school vocational agricultural programs adequately preparing students for continuance in occupations of their choices? Are the secondary and post-secondary programs adequately articulated so that a student can begin his preparation for an occupation in a secondary school and continue his preparation in a post-secondary school without duplication and/or gaps in his program? Are secondary and post-secondary agricultural instructors receiving adequate pre-service and in-service training?

These questions give rise to three basic questions which must be answered first. What competencies do individuals need in order to become employed in various agricultural occupations? What competencies do individuals need for continuance in various agricultural occupations? What competencies do secondary and post-secondary agricultural instructors need to perform adequately their duties and responsibilities? Since the latter three questions must be

answered before decisions can be made regarding the preceding four questions, they have provided both the impetus and direction to this research project.

Theoretical Foundations

Historically, a number of approaches have been used for the development of vocational education curricula. The approaches most commonly used have been (1) the subject approach; (2) the integrated approach; (3) job analysis, occupational analysis, or competency approach; (4) occupational areas or clusters approach; and (5) the functions of industry approach. (Specialized use of terms such as competency and functions are defined in Appendix A.)

These approaches to curriculum development have used various procedures for the selection of subject matter content to be included in a given curriculum. These procedures can be classified as either judgmental, experimental, analytical, or consensual. In the judgmental procedure, the curriculum developer makes a decision as to what should or should not be included in a particular curriculum. An "objective" selection of content by this procedure requires the curriculum developer's interests, knowledge, and ideals to rise above special social groups and embrace the common good. In short, this procedure, perhaps more than any other method of content selection, demands broad social vision and freedom from restricting influences of partisan rationalization(s).[1]

The experimental procedure of content selection tries to determine by actual test whether subject matter satisfies a particular criterion.[2]

Is the curriculum actually doing what it is meant to do? If not, what changes need to be made? These are the types of questions which this procedure tries to answer.

The analytical procedure is probably one of the most widely known methods of content selection. Very simply, it consists of an analysis of what people do in an occupation in order to discover the subject matter functioning in these activities.[3]

The consensual procedure is a way of collecting people's opinions about what they believe the curriculum should be. The results of this procedure are generally expressed in terms of the number or percentage of persons or of a particular group who believe a given content should be taught in schools. (Expertise is not a prerequisite to the consensual procedure.)

During the remainder of this section, the writer will examine the approaches which have been used for the development of vocational education curricula. As a part of this process, particular emphasis will be placed on the specific procedure or combination of procedures used for the selection of content.

Subject Approach

When agriculture was introduced into the secondary schools in 1902, subjects were organized and taught on a yearly basis. Consequently, it seemed quite logical for agricultural instructors to organize their curricula in like manner. For example, a typical

secondary school agricultural program might have offered crops, livestock, farm mechanics, and farm management as separate, yearly courses.

Decisions regarding the subjects to be taught and the content taught within each subject area were primarily made by the vocational agricultural instructor (judgmental procedure).

Integrated Curriculum Approach

As agricultural instructors acquired more experience in teaching agriculture in secondary schools, an inherent weakness of the subject approach became quite evident. Although this approach provided continuity and sequence within a given subject area, instructors encountered considerable difficulty in integrating what was taught from one year to the next. That is, although each subject was taught as a separate entity, many relationships exist between them in a reality situation. For example, a boy needed to relate many of the concepts he learned in crops (freshman year) when making decisions as to the type and amount of forage he should include in a given ration (sophomore year). Most of the knowledge and understanding obtained in the study of crops, livestock, and farm mechanics were necessary in making sound farm management decisions (senior year).

As a result of this weakness in the subject approach, the integrated approach to curriculum development became widely used in the late 1920's and early 1930's. The basic notion which guides this approach was that it cuts across (thus, sometimes referred to

as the cross-sectional approach) all subject areas on a yearly basis. That is, a freshman boy would study the basic concepts in crops, livestock, and mechanics (later such things as FFA, supervised projects, etc., were added) and would build on this in subsequent years by studying the same subject in greater depth and/or breadth. The basic premises of this approach were as follows:

1. It provides flexibility in meeting student needs and interests as these are associated with the programs of supervised farm practices and other activities in vocational agriculture.
2. It permits a graduation and distribution of course materials in keeping with successive levels of understanding as each boy gains maturity and experience.
3. It makes possible the organization of activities which approximates a farm-as-a-whole approach to the study of agriculture from the start.[4]

Decisions made regarding the content to be included in the curriculum were still mainly the responsibility and prerogative of the vocational agricultural instructor. Much of the literature during this period of time would imply, however, that vocational agricultural instructors were becoming sensitive to community and student needs. Therefore, it is conceivable that many instructors' decisions regarding curriculum were not only based on the subject matter which could be taught (judgmental) but also were influenced by the opinions of key individuals or groups in the community; and,

at least to some degree, the students enrolled in vocational agriculture (consensual).

Job Analysis, Occupational Analysis and Competency Approaches

These three approaches are grouped together because there is a definite relationship and similarity among them. Also, all of these approaches use a systematic analytical procedure for content selection.

Dr. Charles Allen[5] was probably the first educator to write on the subject of job analysis. Dr. Allen's writing in 1919 defined job analysis as "a scientific study and statement of all facts concerning a job which reveal its content and the modifying factors which surround it." Dr. Allen stated that the first operation in the development of a training program was determining what should be taught. What should be taught was subsequently determined by what Dr. Allen called trade analysis. Trade (job) analysis was accomplished by listing the skills, knowledge, and attitudes the learner must be taught if he is to be taught the complete trade.

It has been more than a half century since Dr. Allen began his work with job analysis. During this time many educators have used and/or contributed to this process. Mager,[6] a contemporary proponent of this approach, is known for his use of the term, task analysis. Mager begins job analysis by writing or obtaining a written job description. Since he feels the job description is too general or vague to provide insight as to what should be taught to prepare a student for the job, task analysis is the next logical step.

Mager defines a task as "a logically related set of actions required for the completion of a job objective." A job includes a number of tasks. Mager describes task analysis as a two-step operation: first step--task listing--is listing all the tasks that might be included in a job; second step--task detailing--is listing the steps involved in each of the tasks in terms of what the person does when performing the step.

The competency approach to curriculum development is a contemporary approach in education. Competency, although defined somewhat differently by various authors, is the knowledge, skills, attitudes, and judgment generally required for the successful performance (at a predetermined proficiency level) of a task.

When comparing the studies conducted by contemporary researchers[7, 8] using the competency approach with Mager's description and examples of his task analysis approach, it is difficult to discern the difference (other than a semantic one) between a competency and what Mager calls the components of a task. It can be argued, however, that there is a difference in the researcher's intent and emphasis. Mager states that the second step in task analysis (task detailing) is conceived with what is done rather than what must be known. Conversely, competency curriculum development places its emphasis on what knowledge, skills, attitudes, and judgments are generally required for the successful performance of a task rather than all the components comprising the tasks. Another implicit difference is that the task analysis mainly stresses knowledge and skills; whereas, the competency

approach also stresses the dimensions of attitudes and judgment. The term, judgment, implies the use of many cognitive and affective skills in the process of making decisions.

The occupational analysis approach is based on the assumption that an occupation is comprised of one or more jobs. For example, vocational education in agriculture is an occupation. All vocational educators in agriculture, however, do not have the same types of jobs. A vocational educator in agriculture could be employed in a secondary school or a post-secondary school. He could be teaching only adult, only youth, or both. He could be teaching production agriculture, horticulture, agricultural mechanics, or any combination of these among others. Consequently, a vocational educator in agriculture in a post-secondary school who is teaching food chemistry in dairy processing has a quite different job from the secondary school teacher who is teaching production agriculture in a rural area or horticulture in an urban area. All of these educators need professional and technical competencies to perform their jobs adequately. Their professional needs are quite similar. It is this commonality which placed them in the same vocation. Their technical needs are somewhat different. This difference coupled with the difference in clientele and/or setting in which they are teaching would make their jobs different from other vocational educators in agriculture.

Given this relationship between jobs and occupations, occupational analysis is accomplished by the analysis of all jobs included in the occupation.

The major criticism of the job or occupational analysis approach has been that it describes the present activity of workers. Therefore, even though it assists tremendously in preparing students for employment in the existing labor market, it does not prepare a student for future changes in his occupation. In an era of rapid technological changes, this can be a serious handicap.[9]

Thompson[10] believes another disadvantage lies in the inability of the method to permit transfer of learning from one operation to another. He states that:

> "Occupational detail was provided to the trainee without always having him understand why this was a necessary step. In learning the chuck operation of a lathe, for example, the trainee was told it was necessary to take off the face plate, put the chuck on spindle nose, and so on. He understood and could perform what was to be done but he could not always tell why the task was necessary. Lacking this type of occupational understanding, transfer of the skill to other situations was left to chance or to the intelligence and initiative of the trainee."

Occupational Areas or Clusters Approach

As technology and science have increased, the number and types of agricultural occupations also have increased. Consequently, this has provided students with a wider selection of available employment opportunities in the field of agriculture. This situation has placed many schools in the dilemma of either providing an agricultural curriculum which only partially assisted students in the exploration and preparation of an occupation or provided an

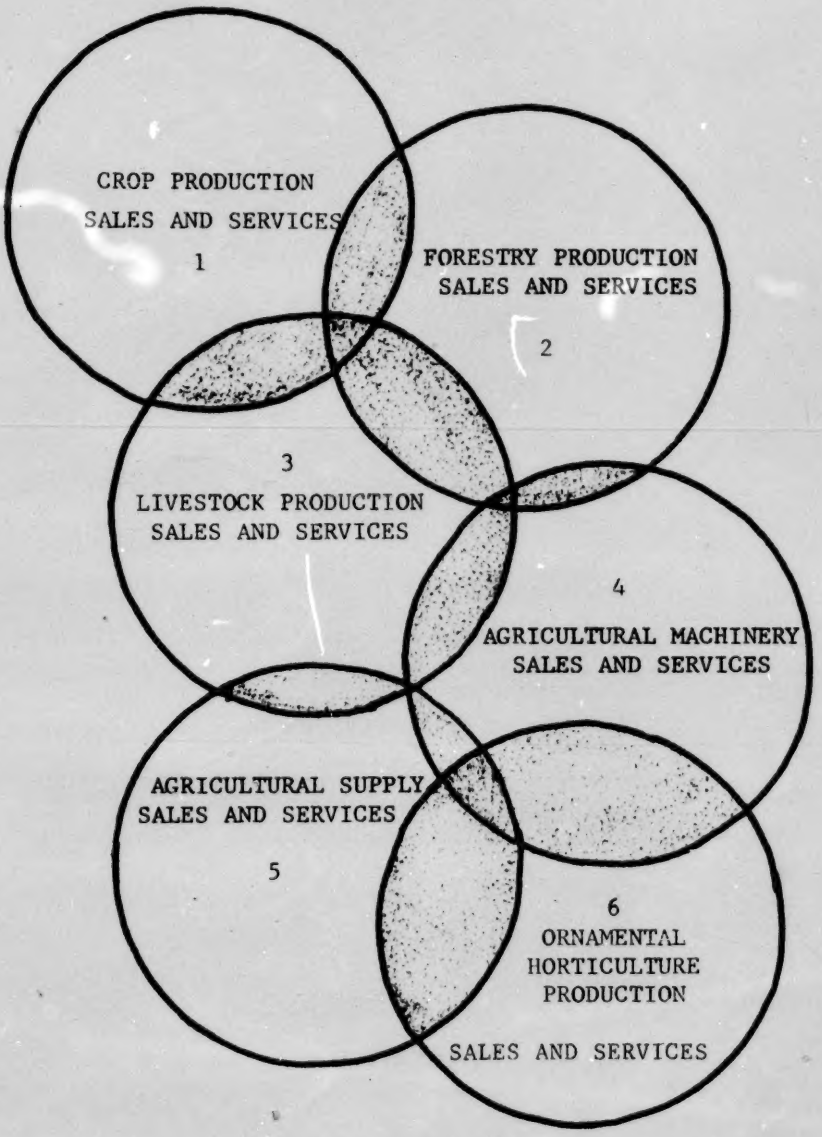
agricultural curriculum which more adequately assisted a limited number of students in the exploration and preparation for their occupations. In other words, the decisions were between providing limited exploration and preparation in many agricultural occupations or providing more in-depth experiences in a limited number of agricultural occupations.

In an attempt to alleviate at least some of this problem, an occupational cluster approach to curriculum development has been suggested by some vocational educators.[11, 12] Basically, in the occupational cluster approach, an attempt is made to identify (through analytical and consensual procedures) competencies which are common and, to some degree, necessary for initial employment in a number of related jobs and/or occupations. For example, Figure I schematically shows how sales and service in a number of related agricultural jobs have a core or set of common (often essential) competencies.

Once these competencies are identified, they serve as a guide for the selection of appropriate content for foundation course(s) which begin to prepare students for a number of related jobs or occupations. These courses are complemented by additional courses which include competencies needed by students seeking employment in specific jobs or occupations within the cluster. The major assumption of this approach is that given a limited quantity of resources a school can more adequately prepare more students for initial employment in a greater number of jobs or occupations.

Figure I

OCCUPATIONAL CLUSTERS IN AGRICULTURE



Thompson[13] believes there are several errors in logic made in the cluster concept approach. He states that:

> "A logical assumption is made that what is common to a family of occupations is what is important which leads to the further assumption that what is unique about a family of occupations is not important to the entry worker. Similarly, another error is made when what is unique about an occupation is assumed to be more technical than what is common to an occupation and hence should be taught at the post-high level. These logical errors are serious. Sociological analyses reveal that persons in a profession within a family of jobs identify with what is unique in that family. Also a more thorough approach to occupational analyses would reveal that what is unique to a job is not necessarily highly technical"

Functions of Industry Approach

The functions of a business or industry have been defined as the operation that must be performed somewhere in the business or industry in order for it to be successful. Function denotes a relatively precise process performed to achieve an outcome which is essential to the overall purpose of the industry.[14] The functions of industry approach employs both the judgmental and consensual procedures of content selection. Basically, this approach attempts to identify all the functions (i.e., processing, transportation, purchasing, selling, accounting, etc.) which are performed at various levels within the industry. One of the major arguments for using the function approach is that it is not job specific; but rather it transcends many jobs. That is, a job may be composed of portions of several functions; or several jobs may be required to complete a function.[15] Therefore, a function requires a given level of

performance of an identifiable group of activities for its successful completion regardless of the size and location of the industry, the title of job(s) in which it is performed, the number of employees in a particular firm, or the specialization of service being provided.

The functions of industry approach, particularly when used in conjunction with other approaches, has become quite popular as a means for curriculum development in vocational education. The reason for this popularity is probably due, at least in part, to the fact that combining this approach with other approaches eliminates nearly all the problems or weaknesses these approaches had separately.

A Summary Discussion of Curriculum Development Approaches

The previous discussion purposely focused on the major concept within various approaches to curriculum development. This might have left the impression that such concepts as occupational clusters, functions, tasks, competencies, etc., were always found in separate and unique approaches.

In reality, however, this is not the case. Figure II indicates how various researchers have combined these concepts into a number of approaches for curriculum development.

As one analyzes the different approaches expressed in Figure II, some observations can be drawn. (1) Clark and Meaders,[16] Gleason,[17] Cotrell[18] and Feck[19] began their investigations by identifying the functions within a particular occupation or occupational cluster. Crawford[20] and Burkey,[21] on the other hand, use functions as a means of organizing or grouping tasks and/or competencies after they had

Figure II

Cotrell, et al

Occupational Area (Cluster) → Functional Categories → Clusters → Behavioral Elements

Feck

Clark

Meaders

Gleason

Occupational Area → Functions-Activities → Competencies

Crawford

Occupation → Critical Tasks → Competencies → (Functions)

Burkey

Occupation → Tasks → (Functions)

identified these tasks and competencies. (2) Although the terminology used is somewhat different, the procedures used by the majority of the researchers were quite similar. Each approach was a multistep operation. Each began with an occupation or occupational area and identified functions or tasks (not jobs) within an occupation. Those concerned with curriculum development then proceeded to identify those competencies a worker needed to perform successfully in the occupation. (3) Upon conclusion of their studies, each researcher indicated he had successfully proved the validity of his approach (model) for curriculum development. (4) Each of these approaches, although bearing new titles and terms, has its foundation in the job and trade analysis approach initiated by Allen and others more than one-half century ago. As stated previously, however, the major difference is that Allen began with the "job" whereas the contemporary researchers began with the "functions" within an occupation or occupational cluster.

Although researchers have varied their study designs in accordance with the setting in which the research was conducted, the major purposes (either explicit or implicit) of these studies can be classified under one of two major headings. These are as follows: (1) Developing a pre-service and/or an in-service program for vocational educators. Crawford[22] (Distributive Education), Feck[23] and Stroller[24] (Agricultural Education), and Cotrell[25] and Erpelding[26] (All Vocational Areas) indicated this to be their major objective. (2) Developing a secondary and/or post-secondary curriculum for individuals seeking employment

in agricultural occupations. Examples of researchers who focused their studies on this purpose are Clark and Meaders,[27] Gleason,[28] and Burkey.[29]

By using the combination of various concepts (i.e., occupational clusters, functions, tasks, competencies, etc.) in a single approach and thereby using more than one procedure for the selection of curricular content, these researchers have alleviated the majority of criticisms made of the approaches which did not combine a number of concepts and/or procedures.

Project Design

Introduction

As the researchers delved into the research literature regarding curriculum development approaches used in vocational education, one fact became quite evident; that is, there was a great need for the development of a conceptual model which would pull together the facts and theories that have been developed and that would help identify areas in which additional research needed to be conducted.

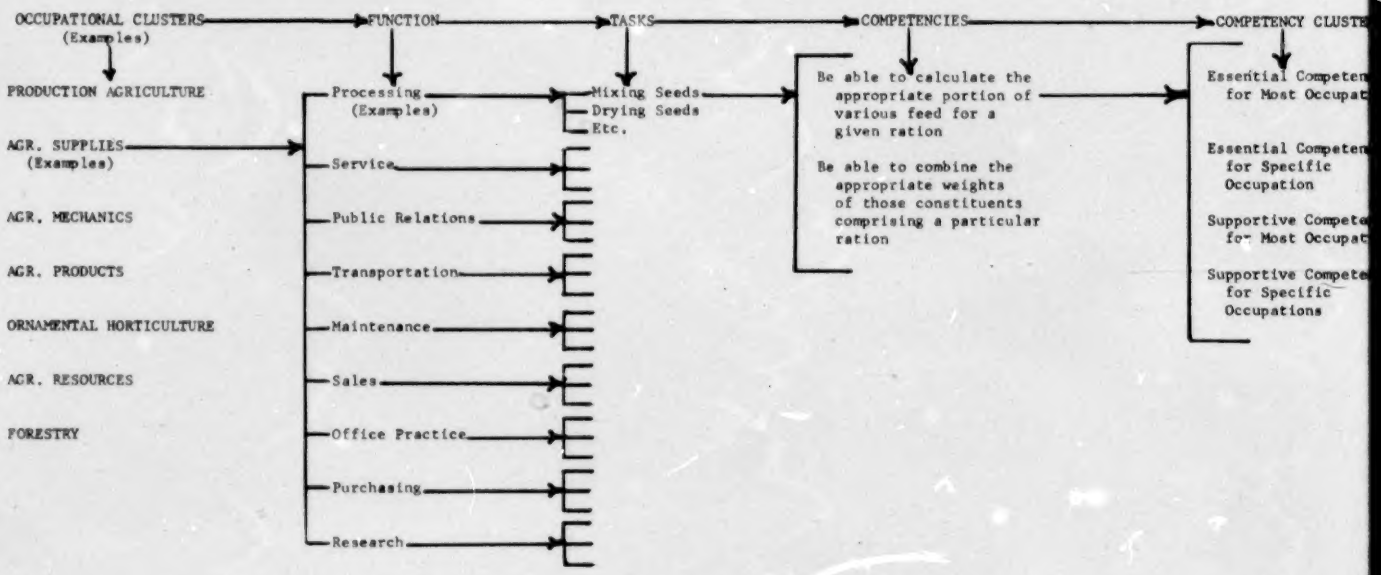
Therefore, one of the first actions taken by the researchers was to develop a model that would not only serve this purpose but would also provide direction for the research efforts. The model is shown in Figure III.

Assumptions Upon Which the Model Was Developed

In the initial stage of this project, the researchers formulated a set of assumptions which subsequently guided the development of

Figure III

FUNCTION-TASK-COMPETENCY APPROACH TO CURRICULUM DEVELOP
FOR
Secondary, Post-Secondary, and Teacher Educational Prog



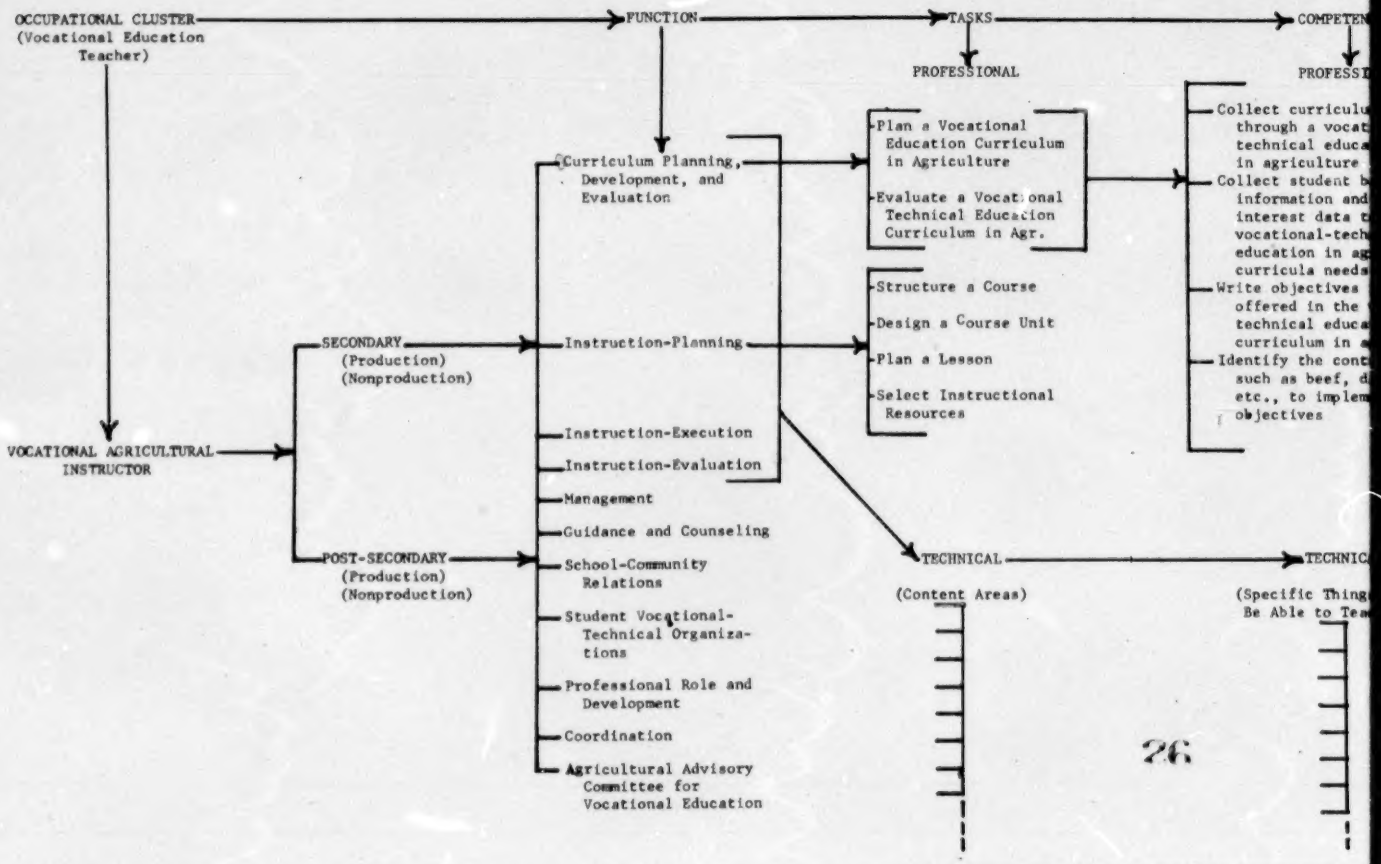
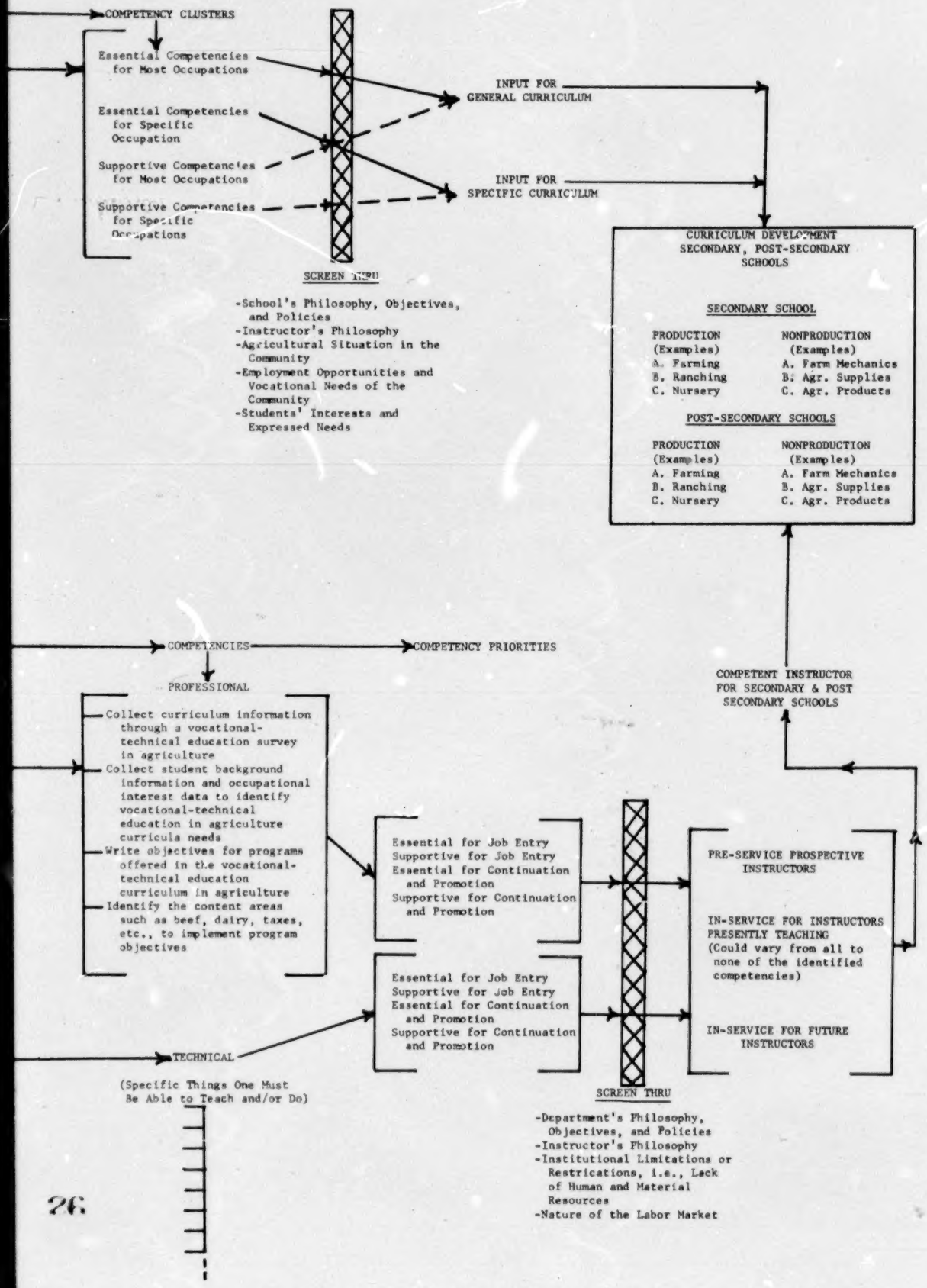


Figure III

APPROACH TO CURRICULUM DEVELOPMENT
FOR
, and Teacher Educational Programs


COMPETENCY CLUSTERS
Essential Competencies for Most Occupations
Essential Competencies for Specific Occupation
Supportive Competencies for Most Occupations
Supportive Competencies for Specific Occupations
INPUT FOR GENERAL CURRICULUM
INPUT FOR SPECIFIC CURRICULUM
SCREEN THRU
-School's Philosophy, Objectives, and Policies
-Instructor's Philosophy
-Agricultural Situation in the Community
-Employment Opportunities and Vocational Needs of the Community
-Students' Interests and Expressed Needs
CURRICULUM DEVELOPMENT SECONDARY, POST-SECONDARY SCHOOLS
SECONDARY SCHOOL
PRODUCTION (Examples)
A. Farming
B. Ranching
C. Nursery
NONPRODUCTION (Examples)
A. Farm Mechanics
B. Agr. Supplies
C. Agr. Products
POST-SECONDARY SCHOOLS
PRODUCTION (Examples)
A. Farming
B. Ranching
C. Nursery
NONPRODUCTION (Examples)
A. Farm Mechanics
B. Agr. Supplies
C. Agr. Products
COMPETENCIES
COMPETENCY PRIORITIES
PROFESSIONAL
Collect curriculum information through a vocational-technical education survey in agriculture
Collect student background information and occupational interest data to identify vocational-technical education in agriculture curricula needs
Write objectives for programs offered in the vocational-technical education curriculum in agriculture
Identify the content areas such as beef, dairy, taxes, etc., to implement program objectives
COMPETENT INSTRUCTOR FOR SECONDARY & POST SECONDARY SCHOOLS
Essential for Job Entry
Supportive for Job Entry
Essential for Continuation and Promotion
Supportive for Continuation and Promotion
Essential for Job Entry
Supportive for Job Entry
Essential for Continuation and Promotion
Supportive for Continuation and Promotion
PRE-SERVICE PROSPECTIVE INSTRUCTORS
IN-SERVICE FOR INSTRUCTORS PRESENTLY TEACHING (Could vary from all to none of the identified competencies)
IN-SERVICE FOR FUTURE INSTRUCTORS
TECHNICAL
(Specific Things One Must Be Able to Teach and/or Do)
SCREEN THRU
-Department's Philosophy, Objectives, and Policies
-Instructor's Philosophy
-Institutional Limitations or Restrications, i.e., Lack of Human and Material Resources
-Nature of the Labor Market

this model. These assumptions were grouped into two general categories: (a) those pertaining to the world of work in agriculture; and (b) those regarding the relationship between students, their occupations, and the public schools.

Assumptions pertaining to the world of work were as follows:

1. The field of agriculture (business and industry in agriculture) has an inherent structure and organization. Jobs can be logically classified under occupations and occupations can be grouped into occupational areas and/or clusters.
2. In addition to any formal organizational structure of occupations within the labor market, there are a set of operations (called functions) which are common to and serve to tie together a number of jobs and/or occupations. These functions are neither job nor occupation specific but can transcend either or both.
3. Within a function there exists a given number of tasks which interdependently contribute to the overall success, operation, and/or continuance of one or more occupational areas.
4. To adequately perform a task, a worker must possess one or more competencies. A competency is defined as the knowledge, skills, attitudes, and judgment required for the successful performance at a predetermined proficiency level of a task.

5. Occupations within an occupational cluster possess some competencies which are common to and essential for the successful performance of tasks within these occupations.

Assumptions regarding the relationship between students, their occupations, and the public schools were:

1. In the foreseeable future, adults will need to be employed in some type of occupation.
2. Other than just a source of economic means, an occupation has and can continue to serve the psychological function of providing self-gratification for an individual.
3. In order that an occupation can serve an individual both economically and psychologically, the individual must be able to select objectively an occupation and possess competencies so he can perform successfully on the job.
4. To accomplish this goal, an individual must have an opportunity (prior to his first employment) to explore various occupations in which he expresses interest and develop competencies in the occupation(s) he selects for future employment.
5. Students cannot easily or readily explore occupations and acquire competencies needed for future employment on their own.
6. Thus, it has become and probably will continue to be the responsibility of the public schools (more specifically vocational education) to provide students with occupational

exploration experiences and competencies they will need to enter and continue in the occupations of their choices.

7. The purpose of vocational education, therefore, is to provide students with educational experience that will permit them to explore, become established, and maintain themselves in the world of work.

Explanation of the Model

The focus of the model is centered in the development of adequate agricultural curricula at the secondary and post-secondary school levels. The development of curriculum which prepared students to enter into the occupations of their choices is the major reason for the existence of vocational educators at all levels. The university-level vocational educators contribute to the achievement of this objective by attempting to prepare adequately high school and post-secondary school vocational agricultural instructors (bottom portion of the model). The secondary and post-secondary vocational educators are ultimately the ones responsible for the development of appropriate and adequate vocational educational curriculum. Decisions they make should be based on a variety of information and informational sources. It should be clear from previous discussions that the competencies one needs to perform successfully in an occupation is one important type of information. The actual occupational setting is an important source of this information (upper portion of the model). We do not wish to imply that the only type of information which should be used to develop a

vocational curriculum is the competencies one needs to successfully perform in an occupation. Other information such as an understanding of how youth grow and develop vocationally (vocational maturing process), the employment opportunities in a community, the interest and expectations of youth regarding employment, and the philosophy of the vocational educator are also important information which should influence curricular decisions.

As one examines the model, it becomes quite obvious that a large number of studies would have to be conducted (some in sequence) to acquire the information needed to answer all the research questions implicit or explicit in the parameters of this model.

In order to facilitate our investigations, therefore, we have divided the project into five (not necessarily mutually exclusive) operational phases.

A. Project Development Phase - Project development activities were classified into three major categories.

1. Development of a Proposal - which would provide direction for a number of related research studies over an extended period of time (this document) and be used to acquire financial support.
2. Development of the Model - shown in Figure III.
3. Development of Project Purpose and Objectives.

The purpose of this project is to identify the functions, tasks, and competencies needed to enter and

continue in selected agricultural occupations with the implications of developing relevant vocational agricultural curricula in Wisconsin's secondary and post-secondary schools and the revision and/or development of the teacher education curriculum to ensure appropriate in-service and pre-service educational programs for vocational agricultural instructors.

The major objectives of this project are to:

a. Develop a comprehensive conceptual model which would delineate the scope and direction of the research conducted within the framework of this project.

b. Identify occupational clusters in the field of agriculture; the functions of each occupational cluster; the task of these functions; and the competencies needed to perform each task.

c. Identify competencies which are essential and supportive for entrance and continuance in an occupational area.

d. Develop a set of guidelines and/or instructional materials which can be used in the development of agricultural curricula at the secondary, post-secondary, and university levels.

e. Assist in the development and/or revision of secondary and post-secondary vocational agricultural curricula and in-service and pre-service educational programs for vocational agricultural instructors.

f. Assist in the evaluation of the curricula and/or programs indicated above (letter e).

B. Identification Phase - this phase would include those activities described in objective letters b and c.

C. Developmental Phase - this phase would include the activities described in objective letter d.

D. Implementation Phase - this phase would include all activities implied in objective letter e. Pilot curricula will be developed and compared with traditional curricula.

E. Evaluation Phase - in this phase an attempt will be made to determine the effectiveness of new (pilot) curricula developed and implemented in phases three and four (developmental and implementation).

Although these phases will be sequenced in the above manner for the development, implementation and evaluation of a specific curriculum or program, various curricular offerings could be simultaneously at different stages of development. For example, since the researchers' initial interest was in the professional competencies of vocational agricultural instructors, pre-service and in-service programs may be implemented in this area

(implementation phase) before an attempt is made to identify the technical competencies (identification phase) needed by these instructors.

Methodology

The extent to which judgmental, experimental, analytical, or consensual procedures will be used for selecting content will be determined, at least to some degree, by the phase in which the researchers are working. For example, in phase one, the researchers will undoubtedly be using judgmental (determining appropriate competencies to submit to a panel of experts) and consensual (using a panel of experts and vocational agricultural instructors) procedures. In phase four, on the other hand, experimental procedure would probably be used.

Specific research methodology employed by investigators in any particular phase of the project will be determined by the researcher(s) conducting the study. The only criteria for selecting a research area and methodology within the project is that they are consistent with the major purpose and objectives of the project.

Significance of the Study

The knowledge and technology explosion which has taken place in the United States in the past two to three decades has had a dramatic effect on our labor market. The total agricultural business and industry which comprises one of the largest sectors of our economy has been no exception; it also has undergone many changes.

One of the most significant effects of this change has been the increased number of different types of jobs in the agricultural complex and the specialized competencies one needs to become adequately employed in many of these occupations.

This change in the labor market has brought about the need for more vocational training, some of which is quite specialized, before prospective employees enter into the labor market. Consequently, an increasing need exists for more vocational and technical educational programs and subsequently more vocational educators.

This series of events gives rise to a number of research questions regarding the competencies and subsequently the educational programs needed by individuals involved at all levels of this process.

The major purpose of this research is to provide, at least in part, answers to these questions.

Footnotes

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[11]Baker, Richard A. "Curriculum for the World of Work," Agricultural Education Magazine, pp. 6-9, July, 1966.

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[13]Thompson, op. cit., p. 170.

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[17]Gleason, op. cit.

[18]Cotrell, op. cit.

[19]Feck, V. J. "Characteristics and Professional Competency Needs of Teachers of Agriculture in Two Year Technical Institutes on Colleges in the United States," Ph.D. dissertation, The Ohio State University, 1971.

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[22]Crawford, op. cit.

[23]Feck, op. cit.

[24]Stroller, R. E. "Determining Professional Competencies of Professional Agriculture Educators," Ph.D. dissertation, University of Nebraska, 1971.

[25]Cotrell, op. cit.

[26]Erpelding, Lawrence H., Jr. "Professional Education Competency Needs of Teachers of Vocational-Technical Programs in Post-Secondary Schools," Ph.D. dissertation, Kansas State University, 1972.

[27]Clark and Meaders, op. cit.

[28]Gleason, op. cit.

[29]Burkey, op. cit.

APPENDIX A

Definition of Terms

The basic terms used in this presentation are defined as follows:

Function:	a process consisting of a number of tasks which contribute to the overall success, operation, and continuance of an occupational area.
Tasks:	a group of related operations which are performed in the execution of a given function of an occupational area.
Competency:	behavioral characteristics of knowledge, skills, attitudes, and judgment generally required for the successful performance at a predetermined proficiency level of a task(s).
Pre-Service Programs:	all organized educational activities in which a student is involved prior to his employment.
In-Service Programs:	all organized educational activities in which a student is involved after his employment.